

WHAT IS CLAIMED IS:

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1. A receiver which demodulates an Orthogonal Frequency Division Multiplexing symbol transmitted by an Orthogonal Frequency Division Multiplexing method, comprising:

10 a delay profile generation unit which generates a delay profile regarding a preceding wave and a delayed wave which are included in a received signal;

15 a demodulation unit which demodulates said received signal so as to output a demodulated signal per sub-carrier;

20 a hard-decision unit which makes a hard decision per sub-carrier on a signal point based on said demodulated signal so as to output a hard-decision signal;

a replica generation unit which uses the hard-decision signal to generate a replica signal per sub-carrier; and

25 an inter-carrier interference suppression unit which adds a difference between said hard-decision signal and said replica signal to said demodulated signal so as to suppress an inter-carrier interference;

30 wherein said replica generation unit comprises:

a time-domain received signal generation unit which inverse-Fourier transforms said hard-decision signal so as to generate a received signal in time domain;

35 a signal component suppression unit which suppresses, by using a preceding symbol that is an already-demodulated OFDM symbol which

- precedes a target demodulating symbol that is a target OFDM symbol to be demodulated, a signal component of said preceding symbol which is included in said delayed wave;
- 5 a modified received signal generation unit which adds, before said target demodulating symbol in said delayed wave, a portion of said received signal in said time domain; and
- 10 a replica signal generation unit which generates said replica signal by Fourier-transforming said modified received signal.
- 15 2. The receiver as claimed in claim 1, wherein said hard-decision unit is adapted to make the hard decision per sub-carrier on the signal point based on a signal 20 in which said demodulated signal and the demodulated signal in another diversity branch are combined so as to output the hard-decision signal.
- 25 3. The receiver as claimed in claim 1, wherein said hard-decision unit
- 30 comprises:
- a decoding unit which error-correction decodes said demodulated signal;
- a decision unit which makes the hard decision per sub-carrier on an error-correction 35 decoded signal point; and
- an output unit which error-correction decodes the hard-decision result so as to

output said hard-decision signal.

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4. The receiver as claimed in claim 1,
further comprising a multi-stage processing route
which performs a series of processing including
generation of the hard-decision signal,
10 generation of the replica signal, and
suppression of the inter-carrier interference.

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5. The receiver as claimed in claim 1,
further comprising a modified received signal
generation unit which further adds a portion of
a known signal which is received per
20 predetermined number of OFDM symbols before the
demodulated symbol of said delayed wave so as
to generate the modified received signal.

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6. The receiver as claimed in claim 1,
wherein said received signal is
modified so as to make signal contents of a
30 portion preceding the target demodulating symbol,
which is included in the delayed wave, equal to
said portion of the received signal in the time
domain.

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7. A receiver which demodulates an Orthogonal Frequency Division Multiplexing symbol transmitted by an Orthogonal Frequency Division Multiplexing method, comprising:

5 a delay profile generation unit which generates a delay profile regarding a preceding wave and a delayed wave which are included in a received signal;

10 a signal component suppression unit which suppresses, by using a preceding symbol that is an already-demodulated OFDM symbol which precedes a target demodulating symbol that is a target OFDM symbol to be demodulated, a signal component of said preceding symbol which is 15 included in said delayed wave;

 a demodulation unit which demodulates said received signal so as to output a demodulated signal per sub-carrier;

20 a hard-decision unit which makes a hard decision per sub-carrier on a signal point based on said demodulated signal so as to output a hard-decision signal;

25 a replica generation unit which uses the hard-decision signal to generate a replica signal per sub-carrier; and

30 an inter-carrier interference suppression unit which adds a difference between said hard-decision signal and said replica signal to said demodulated signal so as to suppress an inter-carrier interference;

 wherein said replica generation unit comprises:

35 a time-domain received signal generation unit which inverse-Fourier transforms said hard-decision signal so as to generate a received signal in time domain;

 a modified received signal generation

unit which adds, before said target demodulating symbol in said delayed wave, a portion of said received signal in said time domain; and

5 generates said replica signal by Fourier-transforming said modified received signal.

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8. The receiver as claimed in claim 7,
wherein said hard-decision unit is
adapted to make the hard decision per sub-
15 carrier on the signal point based on a signal
in which said demodulated signal and the
demodulated signal at another diversity branch
are combined so as to output the hard-decision
signal.

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9. The receiver as claimed in claim 7,
25 wherein said hard-decision unit
comprises:

a decoding unit which error-correction
decodes said demodulated signal;

30 a decision unit which makes the hard
decision per sub-carrier on an error-correction
decoded signal point; and

an output unit which error-correction
decodes the hard-decision result so as to
output said hard-decision signal;

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10. The receiver as claimed in claim 7,
further comprising a multi-stage processing route
which performs a series of processing including
5 the generation of the hard-decision signal, the
generation of the replica signal, and the
suppression of the inter-carrier interference.

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11. The receiver as claimed in claim 7,
further comprising a modified received signal
generation unit which further adds, before the
15 demodulated symbol in said delayed wave, a
portion of a known signal which is received per
predetermined number of OFDM symbols.

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12. The receiver as claimed in claim 7,
wherein said received signal is
modified so as to make signal contents of a
25 portion preceding the target demodulating symbol,
which is included in the delayed wave, to be
equal to said portion of the received signal in
the time domain.

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